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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/715,678	11/18/2003	Lacy G. Cook	PD-03W013	4544
7590	02/23/2005		EXAMINER	
John E. Gunther Raytheon Company P.O. Box 902 (E1/E150) El Segundo, CA 90245-0902				TANINGCO, MARCUS H
			ART UNIT	PAPER NUMBER
			2878	

DATE MAILED: 02/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/715,678	COOK, LACY G.	
	Examiner	Art Unit	
	Marcus H Taningco	2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on _____.
 2a) This action is **FINAL**. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-21 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1-21 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on 18 November 2003 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date: _____ . |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11/18/03</u> . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____ . |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 9, 11, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jamieson (US 5,446,581).

Re claim 1, Jamieson discloses an infrared lens system (Fig. 1) comprising: a front lens 11 having negative optical power (Fig. 1) with a refractive index of about 3.0 (TABLE II); an intermediate lens group 12 and 13 to receive infrared light from the front lens 11 comprising an intermediate lens; a rear lens 14 to receive infrared light from the intermediate lens having positive optical power (Fig. 1) with a refractive index of about 3.0 (TABLE II); and an infrared detector array (Col. 6, 31-34) that receives light from the rear lens 14 (Fig. 1) wherein the system has a pupil (Col. 5, 32-35) located between the rear lens 14 and the detector (Fig. 1). Although Jamieson fails to specify the front and rear lens having a refractive index from about 2.0 to 3.0, Jamieson does, however, teach said lenses having a refractive index slightly above 3.0, which is viewed as an obvious variation of the recited range.

Re claim 2, Jamieson discloses a lens system (Figs. 3 and 5) wherein the front lens 21 and the intermediate lens 32 have a general aspheric configuration (Col. 6, 30-34).

Re claim 9, Jamieson teaches a system as recited above operable in a 3-5 micron wavelength range (Col. 4, 3-9).

Re claim 11, Jamieson discloses an infrared lens system (Fig. 1) comprising: a front lens 11 having negative optical power (Fig. 1); an intermediate lens group 12 and 13 to receive infrared light from the front lens 11 comprising an intermediate lens; a rear lens 14 to receive infrared light from the intermediate lens having positive optical power (Fig. 1) wherein the lens system (Figs. 3 and 5) comprises front lens 21 and intermediate lens 32 having a general aspheric configuration (Col. 6, 30-34).; and an infrared detector array (Col. 6, 31-34) that receives light from the rear lens 14 (Fig. 1) wherein the system has a pupil (Col. 5, 32-35) located between the rear lens 14 and the detector (Fig. 1).

Re claim 15 Jamieson teaches a system as recited above operable in a 3-5 micron wavelength range (Col. 4, 3-9).

2. Claims 3-8, 10, 12-14, and 16-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jamieson in view of Kirkham (US 6,424,460).

Re claim 3, Jamieson discloses an optical system comprising lenses made of silicon and fails to teach other lens materials selected from the group consisting of zinc sulfide, zinc selenide, arsenic trisulfide, and amtilr. Kirkham discloses an optical system comprising lenses made of zinc sulfide (Col. 1, 19-27). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Jamieson to include lenses made of zinc sulfide since the silicon and zinc sulfide are known as art recognized equivalents in the optical

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art and the selection of any of these known equivalents would be within the level of ordinary skill in the art.

Re claims 4, 6-8, and 12-14, Jamieson discloses the claimed invention including the material of the lenses being silicon, which does not have a refractive index close to zero. However, it would have been obvious to one with ordinary skill in the art at the time the invention was made to modify the material of the lens to be one of those with a refractive index close to zero, such as zinc sulfide, for the reasons stated above.

Re claims 5 and 19, Jamieson discloses an optical system comprising lenses made of silicon and fails to teach other lens materials selected from the group consisting of sapphire, spinel, barium fluoride, calcium fluoride, magnesium fluoride, and magnesium oxide. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Jamieson to include lenses made of one of the aforementioned materials since silicon and said materials are known as art recognized equivalents in the optical art to be used in infrared lenses and the selection of any of these known equivalents would be within the level of ordinary skill in the art.

Re claims 10 and 16, Jamieson discloses the claimed invention comprising a detector (Fig. 1) with an opening at the pupil (Col. 5, 32-35) but fails to teach a cold shield. Kirkham teaches an optical system (Fig. 1) comprising a cold shield J. It would have been obvious to one with ordinary skill in the art at the time the invention was made to modify Jamieson with a cold shield in order to cool the detector during infrared applications.

Re claim 17, Jamieson discloses an infrared lens system (Fig. 1) comprising: a front lens 11 having negative optical power (Fig. 1); an intermediate lens group 12 and 13 to receive

infrared light from the front lens **11** comprising an intermediate lens; a rear lens **14** to receive infrared light from the intermediate lens having positive optical power (Fig. 1) wherein the lens system (Figs. 3 and 5) comprises front lens **21** and intermediate lens **32** having a general aspheric configuration (Col. 6, 30-34); and an infrared detector array (Col. 6, 31-34) that receives light from the rear lens **14** (Fig. 1) wherein the system has a pupil (Col. 5, 32-35) located between the rear lens **14** and the detector (Fig. 1). Jamieson discloses the material of the lenses being silicon, which does not have a refractive index close to zero. However, it would have been obvious to one with ordinary skill in the art at the time the invention was made to modify the material of the lens to be one of those with a refractive index close to zero, such as zinc sulfide, for the reasons stated above.

Re claim 18, Jamieson discloses an optical system comprising lenses made of silicon and fails to teach other lens materials selected from the group consisting of zinc sulfide, zinc selenide, arsenic trisulfide, and amtilr. Kirkham discloses an optical system comprising lenses made of zinc sulfide (Col. 1, 19-27) with a refractive index of from about 2.2 to about 2.6 (TABLE I). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Jamieson to include lenses made of zinc sulfide since the silicon and zinc sulfide are known as art recognized equivalents in the optical art and the selection of any of these known equivalents would be within the level of ordinary skill in the art.

Re claim 20 Jamieson teaches a system as recited above operable in a 3-5 micron wavelength range (Col. 4, 3-9).

Re claim 21, Jamieson discloses the claimed invention comprising a detector (Fig. 1) with an opening at the pupil (Col. 5, 32-35) but fails to teach a cold shield. Kirkham teaches an

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optical system (Fig. 1) comprising a cold shield J. It would have been obvious to one with ordinary skill in the art at the time the invention was made to modify Jamieson with a cold shield in order to cool the detector during infrared applications.

Conclusion

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Norrie (US 4,600,265) discloses an infrared optical system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marcus H Taningco whose telephone number is (571) 272-1848. The examiner can normally be reached on M - F 8:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Porta can be reached on (571) 272-2444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MT



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